

The rounded cauda gives rise to a small cluster of recurved cremasteric hooks, the tips of which are securely imbedded in the cocoon.

Other structural features of the pupa are adequately shown on Plate 12, figs. B and C.

The three imagos emerged on Oct. 31, November 10 and December 10, 1955, respectively.

I acknowledge with gratitude the help of Francis Xavier Williams in obtaining the larvae of *Cisthene nexa* and *Agriopodes viridata*, and also am indebted to Dr. Albert W. Herre of Olympia, Washington, for identification of the lichens, *Ramalina combeoides* and *Parmelia trichotera*.



TWO NEW SPECIES OF RHAGOVELIAS

(Hemiptera: Veliidae)

(HEMIPTERA: VELIIDAE)

By CARL J. DRAKE

Ames, Iowa.

The genus *Rhagovelia* Mayr is one of the two largest genera of veliid waterstriders and is represented in the western hemisphere by more than 70 described species. The present paper adds two more members to the genus, both from Brasil.

Rhagovelia accedens, new sp.

APTEROUS FORM: Moderately large, blackish with greyish brown pubescence; pronotum with a broad, rectangular, brownish orange band in front; connexiva brownish exteriorly; appendages with flavotestaceous markings as described with structures. Pronotum produced posteriorly in both sexes so as to cover approximately two-thirds of mesonotum. Length (apterous), 4.20 — 4.75.; width, 1.70 — 1.90 mm.

APTEROUS MALE: Head with usual impressed median longitudinal line and short basal markings, provided with some longer hairs in front. Antennae fuscous black with basal fourth (sometimes nearly one-half) of first segment flavous or brownish flavous, densely pubescent, with usual long hairs on first two segments, measurements — I, 85; II, 45; III, 60; IV, 52. Rostrum testaceous with terminal segment blackish, reaching a little beyond mesosternum.

Pronotum extended posteriorly so as to conceal nearly two-thirds of mesosternum, greatest width (just behind color band) nearly twice the median longitudinal length (110:60). Thorax beneath black with acetabula, coxae and trochanters flavotestaceous, some-

times tinted with brown. Coxae and trochanters without spines. Anterior femora with basal two-fifths flavous; tibiae very little widened apically, with short comb extending a little beyond apex of segment, scarcely longer than femora, 1.25 mm. long. Middle legs very long, slender, entirely black, femora slowly tapering apically 2.25 mm. long; tibiae straight, 1.75 mm. long. Hind femora considerably swollen, 1.90 mm. long, greatest thickness about one-third of total length, with base and often most of inferior surface flavous or brownish flavous, armed beneath at basal two-fifth with a long spine followed by a row of nine or ten smaller spines that rapidly decrease in size towards apex, all spines bent posteriorly, and also armed with a second row of five to seven very short spines near the anterior edge of apical half and parallel to the row of larger spines, without spines or teeth on basal two-fifths; tibiae, 1.55 mm. long, straight or feebly bowed, entirely blackish fuscous, with a short spur at apex, with the median longitudinal row of short stout, blunt, closely-set teeth tilted slightly posteriorly; second tarsal segment a little shorter than III. Male parameres distinctly sinuate rather long, narrowed apically and terminating in a narrow, curved point.

APTEROUS FEMALE: Slightly broader than but with color and markings as in male. Antennal measurements nearly the same as in male. Connexiva fairly wide, upright, considerably embrowned. Hind femora rather slender, armed at apical third by a fairly long spine followed by five or six shorter ones that decrease in size apically, all spines slightly bent posteriorly. Other characters very similar to those in male.

MACROPTEROUS MALE: Pronotum 1.80 mm. wide at humeri and 2.02 mm. long, with posterior part sharply triangular. Hemelytra 2.05 mm. long, much longer than abdomen, blackish fuscous, sparsely hairy on basal third. Total length, 5.75 mm. Winged female unknown.

HOLOTYPE (male) and **ALLOTYPE** (female), both apterous, Parque Nacional da Serra dos Orgada Teresopolos, altitude 1,000 meters. **PARATYPES:** 15 specimens (2 winged), taken at same time as the type.

This species is most closely allied to *R. lucida* Gould and *R. agra*, new sp., but differs from both of them by having the third antennal segment cylindrical and not flattened or compressed dorso-ventrally in either sex. The male parameres are also quite differently shaped with distal part much longer, more narrowed, and sinuate.

Rhagovelia agra, new sp.

APTEROUS FORM: Moderately large, blackish with some bluish plumbeous, especially on ventral surface; pronotum with brownish orange band subapical, about as wide as vertex of head and

divided at middle; pubescence brownish or grayish brown. Appendages with markings as described along with structures. Length, 3.80 mm.; width, 1.52 mm.

MALE: Head with usual impressed median line and basal markings, pubescence longer in front of eyes. Rostrum dark fuscous, paler beneath, extending a little beyond prosternum. Antennae moderately long, blackish fuscous, with usual long hairs on first two segments, third segment strongly flattened and compressed dorso-ventrally, measurements — I, 70; II, 35; III, 46; IV, 42.

Pronotum twice as wide as long (105:54), with posterior margin slowly evenly rounded, covering about three-fifths of mesonotum; mesonotum with exposed posterior part nearly half as long as pronotum. Abdomen slowly tapering posteriorly, connexiva more strongly narrowed on last segment. All coxae, fore and hind trochanters and bases of fore and hind femora flavous or brownish flavous. Anterior femora almost as long as tibiae; tibiae rather densely pubescent, moderately flattened beneath apically, with a short, straight, dark, apical comb. Middle legs long, slender; femora 1.75 mm. long, tibiae 1.40 mm. long; tarsal segments II and III equal in lengths each 0.90 mm. long. Hind femora 1.40 mm. long, moderately swollen, about one-fourth as thick as long, armed beneath at middle with a moderately long spine which is preceded by a row of around 14 closely-set, very short, dark teeth (from base to long spine) and then followed by a row of five or six shorter spines that rapidly decrease in size apically; tibiae straight, subequal to femora in length (1.42 mm. long), with a short spur at apex, armed beneath with a longitudinal row of 12 to 14 short teeth, all of which are tilted posteriorly and difficult to see on account of hairy vestiture. Male parameres shorter and broader apically than in *R. accedens*. Winged male and female unknown.

APTEROUS FEMALE: Slightly stouter than male, but with color and markings very similar. Hind femora slightly incrassate, without armature; tibiae also unarmed. Coxae and trochanters without spines. Connexiva moderately wide, nearly upright, with short hairs along exterior margins, with hairs more numerous behind. Third antennal segment moderately flattened and compressed dorso-ventrally. First dorsal tergite swollen and hairy.

HOLOTYPE (male) and **ALLOTYPE** (female) Rio de Janeiro, Brasil, 1938, C. J. Drake. **PARATYPE:** 1 male (damaged), taken with type.

Recognized from its congeners (species that have the pronotum covering approximately one-half of mesonotum in apterous forms of both sexes) by the shorter antennae flattened third antennal segment in both sexes, and the armature of femora and tibiae of hind legs in male and hind femora in female.